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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,473	12/29/2004	Tetsuya Kamihara	040302-0427	2688

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EXAMINER	
SUITTE, BRYANT P	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,473	KAMIHARA, TETSUYA	
	Examiner	Art Unit	
	BRYANT SUITTE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FUEL CELL SYSTEM

Examiner: Suitte 10/519,473 Art Unit: 1795 July 23, 2008

DETAILED ACTION

1. The applicant's amendment filed on May 23, 2008 was received. Claims 1 and 3-12 were amended. Claim 2 was canceled. Claim 13 was added.

2. The text of those sections of Title 35, U.S.C. code not include in this action can be found in the prior Office Action issued on 01/23/2008.

Election/Restrictions

3. Newly submitted claim 13 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The subject matter of aforementioned claims is a method for controlling a fuel cell system as classified in class 429, subclass 12, which is distinct from the fuel cell system, classified in class 429, subclass 22, as originally recited. The inventions are distinct because the process can be practiced by a fuel cell system not comprising a controller in a manual operation. (See MPEP § 806.05(e))

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 17 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

4. The claim rejections under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement on claims 1-12 are withdrawn because a detailed description on how the nitrogen concentration is monitored inside the recirculation chamber is described in Applicant's arguments.

5. The claim rejections under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter on claims 1-12 are withdrawn because the phrase "kept constant" was deleted.

6. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "controlled to be maintained at a target nitrogen concentration" in claim 1 lines 9-10 is a relative term that renders the claims indefinite. The phrase "target nitrogen concentration" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purpose of compact prosecution the recitation "controlled to be maintained at a target" is interpreted as being within a range. The specification does not distinctly disclose a target that the nitrogen concentration needs to meet.

Claim Rejections - 35 USC § 102

7. Claims 1 and 3-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Simpson et al. (US 2004/0161657).

Regarding claim 1, Simpson teaches a fuel cell system that generates power from a supplied fuel supply system that utilizes a recirculation system for recirculating unused fuel gas that contains nitrogen inside the recirculation system. Furthermore, the system comprises a purge valve for purging nitrogen contained in the recirculation system, also a controller for adjusting a purge valve to maintain a constant concentration of nitrogen. Simpson teaches of the frequency and flow rate of the purge operation being dependent upon the power of the fuel cell. When the fuel cell is running on high power, which is equivalent to a high hydrogen flow rate and a low nitrogen concentration, it is desirable to purge a higher portion of anode exhaust, which is equivalent to increasing the valve opening. Simpson teaches a fuel cell system that contains a controller monitors and controls the hydrogen purge device to open and purge the anode exhaust from the fuel cell for a certain period of time and at certain intervals, which is equivalent to increasing the valve opening of the purge valve to increase the flow rate of the fuel gas. See paragraph 26 and 46.

Regarding claim 3, Simpson teaches a fuel cell system that adjusts the valve or flow regulating device that permits the flow of hydrogen from the hydrogen source to the fuel cell based upon set points or thresholds of the system. See paragraph 33.

Regarding claim 4, Simpson teaches a sensor that measures the temperature of the fuel gas and adjusts the temperature of the fuel gas to be supplied to the fuel cell system. See paragraph 36 and 37.

Regarding claim 5, Simpson teaches regulators that detect the pressure of the fuel gas in the supply system, which allows for the operation of the fuel cell system with the fuel supplied at different pressures without interrupting the operation of fuel cell system. Therefore, one of ordinary skill in the fuel cell art would recognize that the pressure threshold can be adjusted as needed. See paragraph 33.

Regarding claim 6, Simpson teaches a flow regulating device or valve that permits the flow of hydrogen from the hydrogen source to the fuel cell in response to the pressure drop in the fuel supply line. Therefore, one of ordinary skill in the fuel cell art would recognize that when the consumption rate of the fuel gas is elevated the pressure in the supply will decrease. See paragraph 33.

Regarding claim 7, Simpson teaches an blower or ejector provided in the recirculation system, to which supply system is connected; as stated in the above paragraph the pressure sensor for detecting supply pressure of the fuel gas supplied to the blower or ejector, wherein the supply rate of the fuel gas is based on the supply pressure detected by the pressure monitors. See paragraph 33.

Regarding claim 8, Simpson teaches a temperature monitoring system and pressure monitoring system that regulate the supply rate of the hydrogen from the hydrogen source to the fuel cell. See paragraph 33, 36 and 37.

Regarding claim 9, Simpson teaches a flow regulating device or valve in the fuel cell system to permit the flow of fuel gas from the fuel source to the fuel cell in response to the pressure drop in the fuel supply line. Therefore, one of ordinary skill in the fuel cell art can infer that the consumption rate of the fuel gas is based on the pressure of the fuel cell system. See paragraph 33.

Regarding claim 10, Simpson teaches a temperature monitoring system upstream of the pressure regulator(s); where a flow regulating device or valve in the fuel cell system to permit the flow of fuel gas from the fuel source to the fuel cell in response to the pressure drop in the fuel supply line. Therefore, it is inherent to one skilled in the art that the consumption rate of the fuel gas is based on the pressure of the fuel cell system of the that detects the temperature of the fuel cell system to permit the flow of fuel gas from the fuel source to the fuel cell in response to the pressure and temperature of the fuel cell system. See paragraph 33, 36 and 37.

Regarding claim 11, Simpson teaches an ammeter or a voltage monitor, which monitors the electronic signal of the fuel cell system that controls the amount of fuel gas and oxidant to the fuel cell. See paragraph 45, 46, and 50.

Regarding claim 12, Simpson teaches an ammeter or a voltage monitor, which monitors the pressure of the fuel cell, the electronic signal of the voltage monitor controls the speed and controls the hydrogen purge device which controls the amount of fuel gas and oxidant to the fuel cell, which is adjusted occurring to the variation of the pressure in the fuel cell system. See paragraph 45, 46, and 50.

Response to Arguments

8. Applicant's arguments filed May 23, 2008 have been fully considered but they are not persuasive.

Applicant's principle arguments are:

a) Applicant respectfully submits that the Office Action is applying an incorrect standard for enablement. A person of ordinary skill in the art would have been able to make and use the claimed inventions as of Applicant' Original filing date without undue experimentation.

b) The anticipation reference, Simpson, does not teach setting a threshold value of a flow rate through a purge valve based on operation conditions of the fuel cell system and valve opening amount of a purge valve, at least not to maintain nitrogen content as claimed.

In response to Applicant's arguments, please consider the following comments.

a) The office removed the 35 U.S.C. 112, first paragraph rejection based on the detailed description submitted by the applicant.

b) Simpson discloses a system comprising a purge valve for purging nitrogen contained in the recirculation system, also a controller for adjusting a purge valve to maintain a constant concentration of nitrogen. Simpson teaches of the frequency and flow rate of the purge operation being dependent upon the power (operation conditions) of the fuel cell. Simpson does not disclose a threshold for a flow rate per se; however Simpson does disclose a build-up of the nitrogen in the fuel cell thereby poisoning the

fuel cell. The fuel cell will not operate correctly if it is poison with nitrogen, thereby having a higher concentration of nitrogen during operation than the initial start nitrogen concentration. This can be concluded to be a threshold that is set, poison or not poison with nitrogen. The purge control device (72) opens and purges a portion of the anode exhaust thereby restoring the nitrogen concentration to the initial start nitrogen concentration. When the fuel cell is running on high power, which is equivalent to a high hydrogen flow rate and a low nitrogen concentration, it is desirable to purge a higher portion of anode exhaust, thereby decreasing the nitrogen concentration in the fuel cell. It can be concluded that this is equivalent to increasing the valve opening to meet the threshold set by the nitrogen poison or not nitrogen poison requirement.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYANT SUITTE whose telephone number is (571)270-3961. The examiner can normally be reached on Mon-Fri 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BS

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795